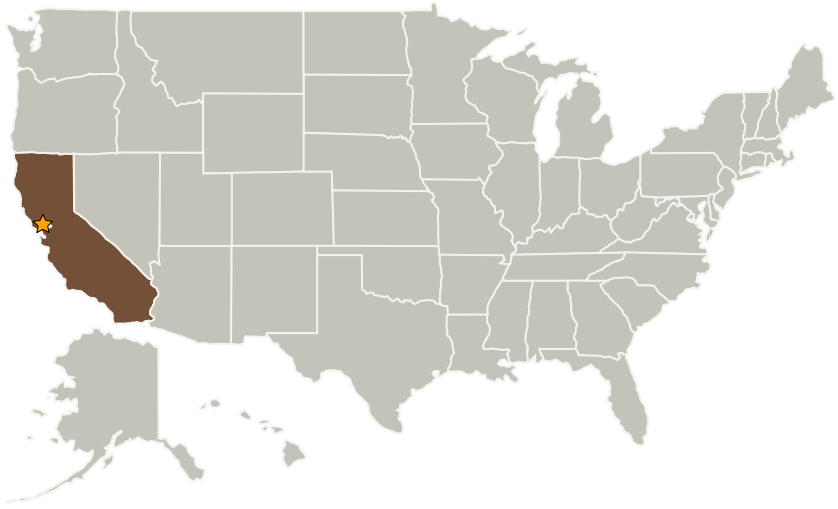
Laser Ablation - Optical Cavity Isotopic Spectrometer (LAOCIS), Phase II

Completed Technology Project (2009 - 2011)

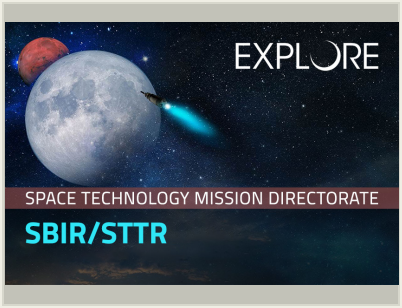
Project Introduction

We propose the detailed conceptual development of a device for analyzing key isotopic composition in surface materials without sample preparation. We will combine absorption spectroscopy with laser induced vaporization of solid samples for high-resolution isotopic measurements. An immediate focus is on Mars but our concept is also highly germane to other applications relevant to bio- and geochemical objectives. We will evaluate accuracy, sensitivity, and resolution of our technology for isotopic detection of the key elements associated with signs of life (C, S, H, O) in solid materials. All essential design components of the proposed analyzer have been separately developed and demonstrated in very compact form for other applications. We will demonstrate the overall performance of the proposed technique and build a breadboard prototype instrument. Commercial systems based on the Phase II prototype will be developed and marketed during Phase III.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California
Applied Spectra, Inc.	Supporting Organization	Industry	Fremont, California



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Ames Research Center (ARC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations
California

Project Transitions

December 2009: Project Start

December 2011: Closed out

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.5 Lasers